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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/755,528	01/12/2004	Yoji Yamamoto	82478-4500	1298
21611 7590 09/25/2007 SNELL & WILMER LLP (OC) 600 ANTON BOULEVARD SUITE 1400 COSTA MESA, CA 92626			EXAMINER HINES, ANNE M	
			ART UNIT 2879	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/755,528

Applicant(s)

YAMAMOTO ET AL.

Examiner

Anne M. Hines

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 July 2007.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 23 and 24 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4-13 and 16-22 is/are rejected.
- 7) ☒ Claim(s) 3, 14 and 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

The amendment filed on July 3, 2007, has been entered and acknowledged by the Examiner.

Claims 1-24 are pending in the instant application.

Claim Objections

Claims 5 and 22 are objected to because of the following informalities: Claims 5 and 22 appear to contain a typographical error; in claim 5 the phrase "a first axis traverse to the side surface" and in claim 22, the phrase "a first axis positioned traverse to the longitudinal axis" it appears to the Examiner that the word 'traverse' is intended to be transverse. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 4-9, 11-13, 16, 18-20, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (US 6300711) (of record) in view of Komiya et al. (US 6552479).

Regarding claims 1, 6, and 7, Yamamoto teaches a cathode structure for an electron gun of a cathode ray tube (Fig. 2; Column 1, lines 46-57) comprising a coil-type heater (Fig. 1, 10; Column 3, line 28) and a cathode unit (Fig. 1, 8; Column 3, line 43) disposed at a first end surface of the coil-type heater including a metal cup (Fig. 1, 15; Column 3, lines 25-29) and a pellet member supported in the metal cup, the pellet member containing an electron-emitting material (Fig. 1, 9; Column 3, lines 25-29). Yamamoto fails to teach an insulating material body and wherein the heating wire is coiled about a first axis that is parallel to the first end surface of the electric insulating material.

In the same field of endeavor of coil-type heaters for electron guns of cathode ray tubes (Fig. 6; Abstract), Komiya teaches a coil-type heater with an insulating material body and wherein the heating wire is coiled about a first axis that is parallel to a first end surface of the electric insulating material within the insulating material body (Fig. 5, since the axis about which the heating wire is coiled follows the larger coils of the heater it is parallel to the first end surface at the portion at the first end surface; Fig. 9b, 31 & 32; Column 2, lines 48-52) in order to improve heat radiation from the heater and thereby improve reliability (Column 2, lines 52-55).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the invention of Yamamoto to have the coil-type heater of Komiya including the insulating material body and coiled heater wire with a first axis parallel to the first surface in order to improve heat radiation from the heater and thereby improve reliability, as disclosed by Komiya.

Regarding claim 2, Komiya further teaches wherein the electric insulating material body includes a wall disposed on the second end surface so as to surround a position from which the heating wire leads out (Fig. 5, see end corresponding to lower end of 'HA'). Motivation to combine is the same as for claim 1.

Regarding claim 4, Komiya further discloses wherein the electric insulating body is a circular columnar shape, and includes a part that has a greater diameter than that of the second end surface (Fig. 9b, 32 & 33; Column 2, lines 48-52; Fig. 5, 'HA' & 'HB'). Motivation to combine is the same as for claim 1.

Regarding claims 5, 8, and 9, Yamamoto teaches a cathode structure for an electron gun of a cathode ray tube (Fig. 2; Column 1, lines 46-57) comprising a coil-type heater (Fig. 1, 10; Column 3, line 28) and a cathode unit (Fig. 1, 8; Column 3, line 43) disposed at a first end surface of the coil-type heater including a metal cup (Fig. 1, 15; Column 3, lines 25-29) and a pellet member supported in the metal cup, the pellet member containing an electron-emitting material (Fig. 1, 9; Column 3, lines 25-29). Yamamoto fails to teach an electric insulating material body and a heating wire that is partially buried and in contact with the electric insulating material body and leads out from a side surface thereof, wherein the heating wire is coiled within the insulating body, around a first axis transverse to the side surface, and the electric insulating material body includes a protrusion disposed on the side surface between a position from which the heating wire leads out and the surface of the cathode.

In the same field of endeavor of coil-type heaters for electron guns of cathode ray tubes (Fig. 6; Abstract), Komiya teaches a coil-type heater with an insulating material

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body and wherein the heating wire is partially buried and in contact with the insulating material body and leads out from a side surface thereof and is coiled about a first axis that is transverse to the side surface within the insulating material body (Fig. 5, since the axis about which the heating wire is coiled follows the larger coils of the heater it is transverse to the side surface; Fig. 9b, 31 & 32; Column 2, lines 48-52) and the electric insulating material body includes a protrusion disposed on the side surface between a position from where the heating wire leads out and the cathode (Fig. 5) in order to improve heat radiation from the heater and thereby improve reliability (Column 2, lines 52-55).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the invention of Yamamoto to have the coil-type heater of Komiya including the insulating material body and coiled heater wire with a first axis transverse to the side surface and the insulating material body having a protrusion on the side surface in order to improve heat radiation from the heater and thereby improve reliability, as disclosed by Komiya.

Regarding claims 11 and 18, Komiya further discloses wherein the electric insulating material body is a ceramic (Fig. 9b, 32; Column 2, lines 48-52). Motivation to combine is the same as for claim 1.

Regarding claims 12, 13, and 19, Yamamoto further discloses a supporting metal wire attached to the cathode structure between the metal cup and the heater and extend outward from the side of the cathode structure (Fig. 1).

Regarding claim 16, Komiya further discloses wherein the columnar electric insulating material body has a cylinder shape with a lower extending annular wall surrounding the exit of the heating wire from the second end surface (Fig. 5, see end corresponding to lower end of 'HA'). Motivation to combine is the same as for claim 1.

Regarding claim 20, Yamamoto teaches a cathode structure for an electron gun of a cathode ray tube (Fig. 2; Column 1, lines 46-57) comprising a coil-type heater (Fig. 1, 10; Column 3, line 28) and a cathode unit (Fig. 1, 8; Column 3, line 43) disposed at a first end surface of the coil-type heater including a metal cup (Fig. 1, 15; Column 3, lines 25-29) and a pellet member supported in the metal cup, the pellet member containing an electron-emitting material and extending above the metal cup (Fig. 1, 9; Column 3, lines 25-29) and a plurality of support wires attached to the cathode structure between the metal cup and the heater and extend outward from the side of the cathode structure (Fig. 1). Yamamoto fails to teach an insulating material body and wherein the heating wire is coiled about a first axis that is parallel to the first end surface of the electric insulating material and wherein the insulating material body has a lower extending annular wall surrounding the exit of the heating wire from the second end surface.

In the same field of endeavor of coil-type heaters for electron guns of cathode ray tubes (Fig. 6; Abstract), Komiya teaches a coil-type heater with an insulating material body and wherein the heating wire is coiled about a first axis that is parallel to a first end surface of the electric insulating material within the insulating material body (Fig. 5, since the axis about which the heating wire is coiled follows the larger coils of the heater it is parallel to the first end surface at the portion at the first end surface; Fig. 9b, 31 &

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32; Column 2, lines 48-52) in order to improve heat radiation from the heater and thereby improve reliability (Column 2, lines 52-55) a wherein the insulating material body has lower extending annular wall surrounding the exit of the heating wire from the second end surface (Fig. 5, see end corresponding to lower end of 'HA').

Therefore, it would have been obvious to one of ordinary skill in the art to modify the invention of Yamamoto to have the coil-type heater of Komiya including the insulating material body with the lower extending annular wall and coiled heater wire with a first axis parallel to the first surface in order to improve heat radiation from the heater and thereby improve reliability, as disclosed by Komiya.

Regarding claim 22, Yamamoto teaches a cathode structure for an electron gun of a cathode ray tube (Fig. 2; Column 1, lines 46-57) comprising a coil-type heater (Fig. 1, 10; Column 3, line 28) and a cathode unit (Fig. 1, 8; Column 3, line 43) disposed at a first end surface of the coil-type heater including a metal cup (Fig. 1, 15; Column 3, lines 25-29) and a pellet member supported in the metal cup, the pellet member containing an electron-emitting material (Fig. 1, 9; Column 3, lines 25-29). Yamamoto fails to teach an electric insulating material body and a heating wire that is partially buried and in contact with the electric insulating material body and leads out from a second end surface thereof, wherein the electric insulating body is in a circular columnar shape with a longitudinal axis, and wherein the heating wire is coiled within the insulating body, around a first axis transverse to the longitudinal axis, and the electric insulating material body includes a part that has a greater diameter than the second end surface.

In the same field of endeavor of coil-type heaters for electron guns of cathode ray tubes (Fig. 6; Abstract), Komiya teaches an electric insulating material body and a heating wire that is partially buried and in contact with the electric insulating material body and leads out from a second end surface thereof (Fig. 9b, 31 & 32; Column 2, lines 48-52), wherein the electric insulating body is in a circular columnar shape with a longitudinal axis (Fig. 5; Fig. 9b, 31 & 32; Column 2, lines 48-52), and wherein the heating wire is coiled within the insulating body, around a first axis transverse to the longitudinal axis (Fig. 5, since the axis about which the heating wire is coiled follows the larger coils of the heater it is transverse to the longitudinal axis of the heater; Fig. 9b, 31 & 32; Column 2, lines 48-52), and the electric insulating material body includes a part that has a greater diameter than the second end surface (Fig. 5) in order to improve heat radiation from the heater and thereby improve reliability (Column 2, lines 52-55).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the invention of Yamamoto to have the coil-type heater of Komiya including the insulating material body and coiled heater wire with a first axis transverse to the longitudinal axis of the insulating material body and the insulating material body having a part that has a greater diameter than the second end surface in order to improve heat radiation from the heater and thereby improve reliability, as disclosed by Komiya.

Claims 10, 17, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (US 6300711) (of record) and Komiya et al. (US 6552479) in view of Lee (US 5451831) (of record).

Regarding claims 10 and 17, Yamamoto and Komiya teach the invention of claims 1 and 5, but fail to teach wherein the electron-emitting material contains barium oxide.

In the same field of endeavor of electron-emitting materials for cathodes of cathode ray tubes, Lee teaches a cathode with an electron-emitting material contains barium oxide (Column 3, lines 21-46) in order to provide a cathode where the electron emission material is not rapidly exhausted due to operation of the cathode heater (Column 4, lines 11-27).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the invention of Yamamoto and Komiya to have the electron-emitting material of Lee in order to provide a cathode where the electron emission material is not rapidly exhausted due to operation of the cathode heater, as disclosed by Lee.

Regarding claim 21, Yamamoto and Komiya teach the invention of claim 20, but fail to teach wherein barium oxide is the electron-emitting material in the columnar pellet and a surface of the columnar pellet above the metal cup is covered with an osmium-ruthenium thin film.

In the same field of endeavor of electron-emitting materials for cathodes of cathode ray tubes, Lee teaches a cathode with an electron-emitting material contains barium oxide (Column 3, lines 21-46) in a columnar pellet and the surface of the columnar pellet is covered with an osmium-ruthenium thin film (Column 1, lines 45-55) in order to provide a cathode where the electron emission material is not rapidly exhausted due to operation of the cathode heater (Column 4, lines 11-27).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the invention of Yamamoto and Komiya to have the electron-emitting material and osmium-ruthenium coating of Lee in order to provide a cathode where the electron emission material is not rapidly exhausted due to operation of the cathode heater, as disclosed by Lee.

Allowable Subject Matter

Claims 23-24 are allowed.

Claims 3, 14, and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The reasons for allowance of the claims were previously stated in the office action of April 6, 2007 and will not be reiterated here.

Response to Arguments

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anne M. Hines whose telephone number is (571) 272-2285. The examiner can normally be reached on Monday through Friday from 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Anne M Hines
Patent Examiner
Art Unit 2879


MARICELI SANTIAGO
PRIMARY EXAMINER